

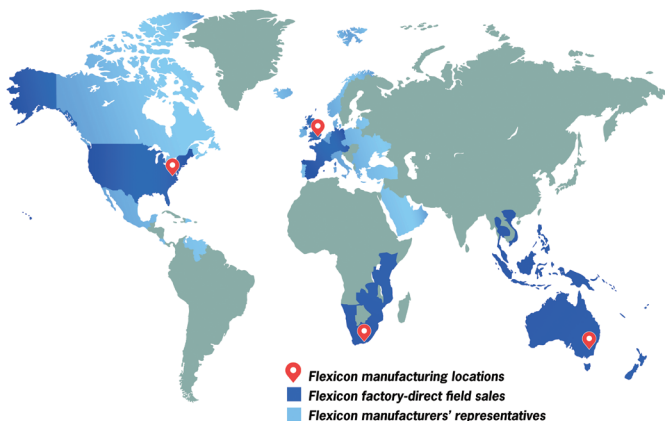
FLEXICON CASE STUDY



Three tubular cable conveyor circuits and two automated box dumpers move brittle pasta to three sanitary packaging lines at high rates without product breakage or dust.

Brittle Pasta Handled Gently, Automatically with Box Dumpers, Tubular Cable Conveyors

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CHARLEROI, PA — To move brittle pasta from Gaylord containers to three packaging lines at high rates without product breakage or dust, Quality Pasta Company installed two Open-Chute Box Dumpers and three Flexi-Disc® Tubular Cable Conveyor (TCC) circuits, in which low friction polymer discs attached to a stainless steel cable gently slide the pasta through smooth stainless steel tubing.

“The TCCs transport pasta with a breakage rate of less than 1%,” says Todd Kish, operations manager. “Consumers are knowledgeable about product quality and do not want to see breakage in the pasta they buy,” adding, “many competitors load pasta into hoppers with plastic shovels for discharge to conveying lines, which is labor intensive and increases breakage.”

Since the TCC is an enclosed system, it also prevents the release of dust and other particulates into the sanitary packaging area.

How pasta moves from bulk boxes to retail packages

Pasta arrives in Gaylord containers — double- or triple-wall corrugated bulk boxes — that weigh 800 to 1300 lb (363 to 590 kg). After quality assurance inspection and weighing of the containers, the material is stored until ready for packaging. Kish says the company schedules as much packaging of individual pasta types as possible each day to reduce product changeover and downtime.

The two Open-Chute Box Dumpers from Flexicon Corp. automatically raise and tilt the Gaylords, which discharge pasta into 8 cu ft (227 l) hoppers. Pasta discharges from the hoppers onto vibratory tray feeders that control the rate at which material flows into the inlet adapter of each Flexi-Disc® conveyor, also from Flexicon.

A proximity level switch connected to an indicator light in the PLC control panel alerts operators to low material levels in the large hopper.

One box dumper additionally serves the cup pasta line. “The cup pasta is fragile and we only package 2,000 lb. (907 kg) of the product per day,” says Kish. Using two dumpers for three lines also leaves more floor space for operation, he adds.

“The system supplies ample product to our cartoning lines without much maintenance or difficulty,” Kish says.

Each 4 in. (102 mm) diameter TCC circuit runs in an “S” shape starting horizontally, rising 8 ft (2.4 m) vertically, and continuing 2 ft (0.6 m) horizontally, ending at a drive wheel discharge housing from which material flows through a metal detector and into a packaging machine hopper. The



Open-Chute Box Dumper empties a Gaylord into the large hopper from which pasta moves on a vibratory tray feeder into the smaller hopper and inlet adapter of the Flexi-Disc® tubular cable conveyor.

vertical leg includes two 3 ft (0.9 m) transparent sections for operators to visually monitor performance of the system.

The cable-disc assembly's direction of travel is reversed at the discharge end of the circuit by the drive wheel, and at the intake end of the circuit by a tensioning wheel that keeps the cable taut throughout the system.

Because the tubular cable conveyors fully evacuate material, cleaning and product changeover can be accomplished in 15 to 20 minutes, says Kish. During changeovers, workers clean the TCC lines with antibacterial swabs and flexible sponges.

Portable flexible screw conveyor transports cheese powder

Quality Pasta also employs a portable, caster-mounted 15 ft (4.6 m) ft long, 4.5 in. (114 mm) diameter flexible screw conveyor from Flexicon with a 5.5 cu ft (156 l) capacity hopper to transport powdered cheese for packet packaging and inclusion in some product boxes. The hopper includes a tray support for manually emptying bags and is designed for poorly flowing materials. Between the conveyor discharge and packaging machine, material passes through a metal detector.

The inner screw of the conveyor is the only moving part contacting the powdered cheese, and is driven above the point at which it exits the conveyor, preventing material contact with bearings or seals. The spiral is specially designed to move non-free-flowing materials such as cheese powder.

Portability is important for the “cheeser” line sanitary conveyor, Kish explains, because it is removed from the cheese room for regular cleaning of the inner spiral, as well as for kosher cleaning.

The company sells seven branded pasta products, in noodle, shell and macaroni form. Offerings include high protein macaroni and cheese, and shells and cheese lines, and a microwaveable macaroni and cheese cup. Kish says 95 percent of products are sold to retailers and the balance to institutional users.

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Overall view of third tubular cable conveyor line shows the hopper and intake at the tensioning wheel end (left), the conveyor's horizontal and vertical 'S' shape, and discharge at the drive wheel end (right) into the cup packaging line.



A clear section of vertical tubing permits visual monitoring of system performance and product quality during transport.



Tubular cable conveyor curves to vertical and discharges at the drive wheel end into the cup packaging line.



Portable "cheeser" line includes a 5.5 cu ft (156 l) hopper and 15 ft (4.6 m) long Flexicon screw conveyor for packet packaging of cheese powder.

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